



This manual has been scanned by the  
Vickers MG Collection & Research Association

[www.vickersmg.org.uk](http://www.vickersmg.org.uk)

Please support the work of the Association.

Click on the image to donate through PayPal:



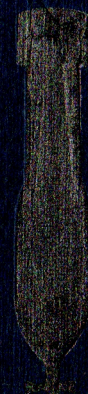
Or regularly support us through Patreon:



A not-for-profit company, limited by guarantee, registered in England, Company Registration Number 07855202



VICKERS-  
ARMSTRONGS  
AIRCRAFT  
ARMAMENT



VICKERS-ARMSTRONGS  
LIMITED  
VICKERS HOUSE, BROADWAY  
LONDON, S.W. 1



*C. J. Perry*  
*1929.*  
*76*

# VICKERS-ARMSTRONGS AIRCRAFT ARMAMENT

Details and description  
Limited, reference  
and pamphlets of  
est.

VICKERS-ARMSTRONGS LIMITED

VICKERS HOUSE  
BROADWAY, LONDON, S.W. 1

Telephone :  
Victoria 6900

Cablegrams :  
Vicastrong, London

Telegrams :  
Vicastrong, Sowest,  
London



## VICKERS-ARMSTRONGS AIRCRAFT ARMAMENT.

AS a result of experience gained in the Great War, supplemented by careful and continuous experiments during the last ten years, the progress in design of the various weapons which form the armament of modern aircraft has been little short of revolutionary.

In 1914 the principal weapons with which aeroplanes were equipped consisted of Revolvers, Carbines, and Darts (flechettes), but aircraft of to-day may carry heavy calibre guns firing high explosive and bombs ranging in weight from a few pounds to about 2,000 kgs., while aircraft engaged in naval warfare can carry torpedoes weighing nearly 1,000 kgs.

Vickers Limited formed an aviation department as early as 1911 and commenced forthwith the study of all questions concerning the armament of aircraft, and in 1915 the firm designed and manufactured the first armed aircraft, known as the F.B.5.

The recent amalgamation of Vickers Limited with Sir W. G. Armstrong Whitworth & Co. Ltd., has resulted in the combination of all the resources of these great armament firms in ensuring a continuous and progressive policy in the design, construction, and testing of all forms of armament for use in the air.

This means that the fullest advantage can now be taken of the famous works of Barrow, Elswick, Erith, Crayford, and Dartford, all of which are equipped with the most modern form of tool equipment available. In addition, Vickers-Armstrongs dispose of exceptional facilities for the

testing of both guns and bombs at their ranges at Eskmeals and Risdale.

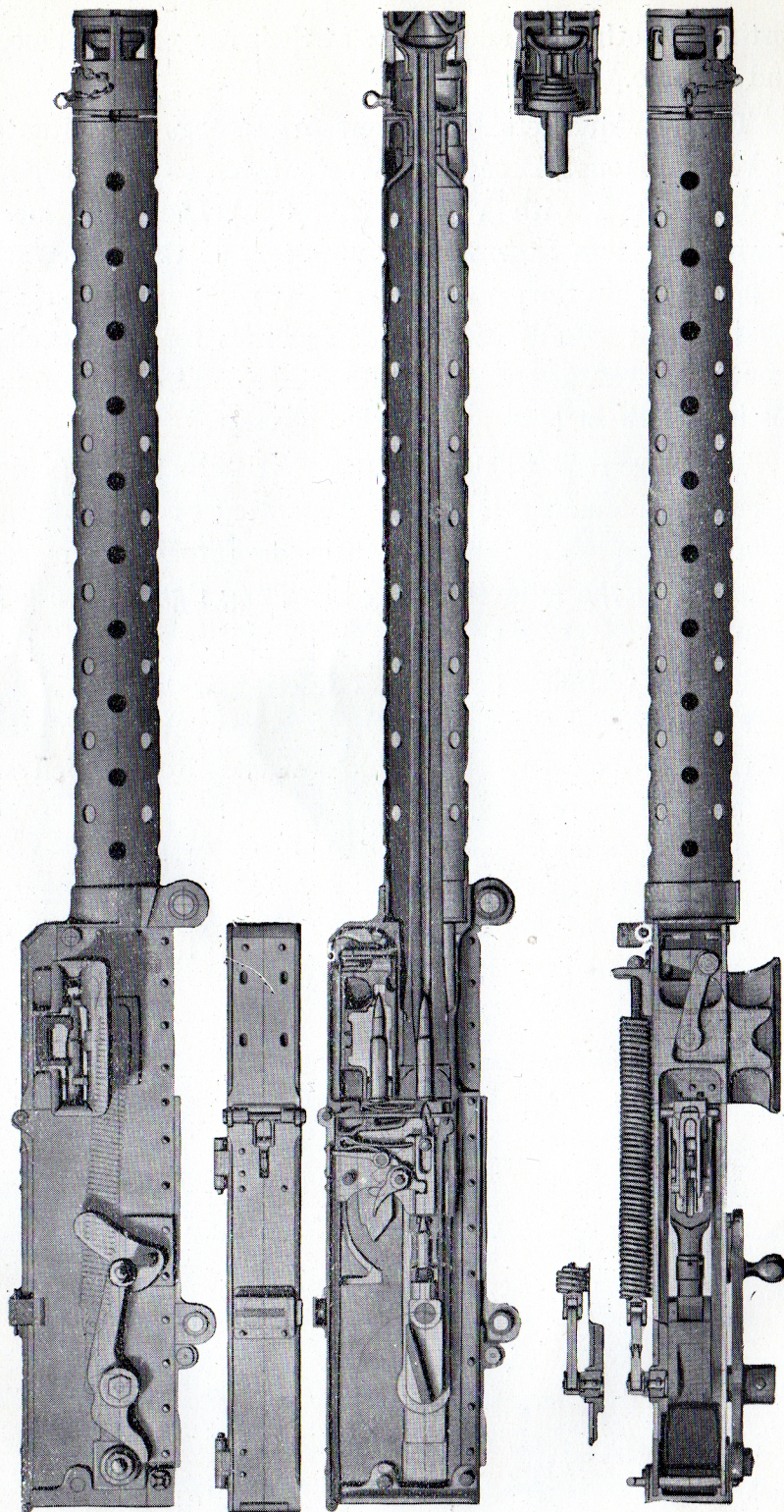
The headquarters of Vickers-Armstrongs are situated at Vickers House, Broadway, Westminster, so that they are in daily touch with Vickers (Aviation) Ltd. and Supermarine Aviation Ltd., the headquarters of the three firms being housed in the same building. It will be seen that this arrangement affords exceptional facilities for the development of aircraft armament of all natures and for its thorough testing, both in land and marine aircraft.

The more recent achievements of the firm in the field of aircraft armament can best be illustrated by the following brief descriptions of the principal items actually developed, or of which the manufacturing or selling rights have been acquired.

For full technical details and description of the products of Vickers-Armstrongs Limited, reference should be made to the handbooks and pamphlets of each item, which will be supplied on request.



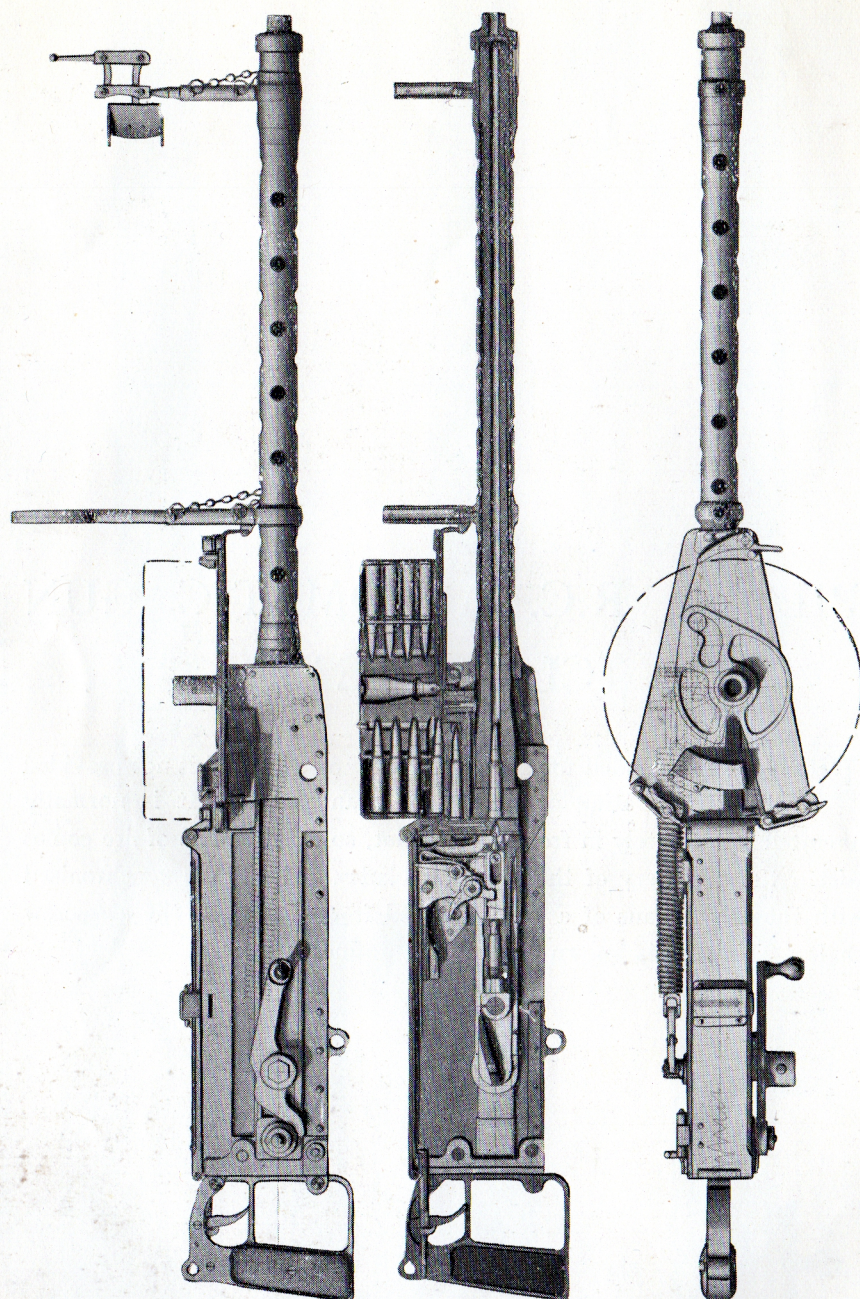
VICKERS AUTOMATIC R.C. GUN (CLASS "E").



## PILOT'S R.C. AUTOMATIC GUN (CLASS "E").

THIS gun is intended for use on a fixed mounting and is not provided with any elevating or traversing arrangements. It is normally mounted immediately in front of the pilot, so that the line of fire comes within the periphery of the propeller blades. The fire is synchronised with these by means of a gear operated from a cam on the air screw shaft. This gear is known as the Constantinesco Gear.





### OBSERVER'S R.C. AUTOMATIC GUN (CLASS "F").

THIS gun, which is a modification of the former, is provided with a drum instead of belt feed. The drum consists of a pan-shaped magazine, holding about 100 rounds. The gun is mounted in such a manner that it can be elevated and traversed to obtain the maximum field of fire consistent with the design of the aircraft.



### VICKERS-BERTHIER OBSERVER'S R.C. GUN.

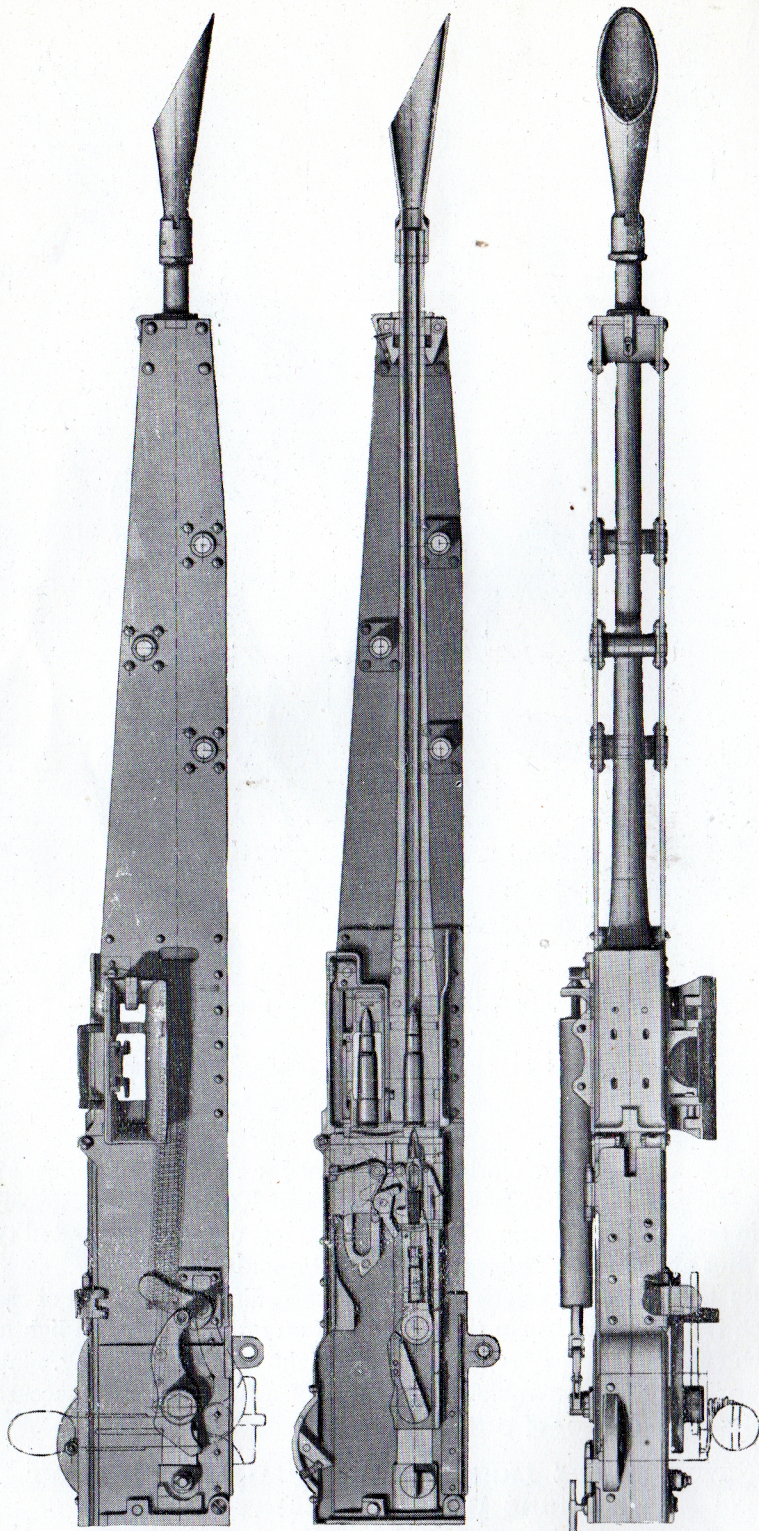
THIS gun, which was originally designed as a Land Service Light Machine Gun, has now been re-designed to make it suitable for use in aircraft as an observer's gun. The gun is of the gas operated type, and fires at the rate of approximately 800 rounds per minute.

Its principal characteristics are its exceedingly light pull of recoil, which is actually less than the "kick" of an ordinary rifle, its lightness, which enables it to be fired from a very light type of mounting, making it very easily manoeuvrable and capable of a high degree of accuracy, and its small number of parts and extreme simplicity.

**THIS IS THE LIGHTEST AND SMALLEST AIRCRAFT  
MACHINE GUN AT PRESENT MADE.**



VICKERS .5-INCH AUTOMATIC PILOT'S GUN.



## VICKERS AUTOMATIC PILOT'S GUN .5-inch (12.7 m/m.).

FOR the attack of armoured and large all-metal aircraft, and such ground targets as tanks and other armoured vehicles, the penetrative power of the rifle calibre machine gun may prove insufficient to deal with such targets. Messrs. Vickers-Armstrongs have designed a machine gun of .5-inch calibre similar in general construction to the rifle calibre E Class gun. The weight of the bullet fired is 550 grams (35.64 grammes), or three times that of the ordinary service bullet, while its muzzle velocity is very high, being more than 2,600 feet per second (792.47 metres per sec.).



## HEAVY GUNS FOR AIRCRAFT.

THE development of various calibres of aircraft guns capable of firing explosive shell is now well advanced.

The weight and pull of recoil of these guns has been reduced to a minimum.

They embody many novel and interesting characteristics, which make the guns entirely satisfactory for mounting on aircraft.

The main principles underlying the general design of these guns have already been thoroughly tested out on the ground.

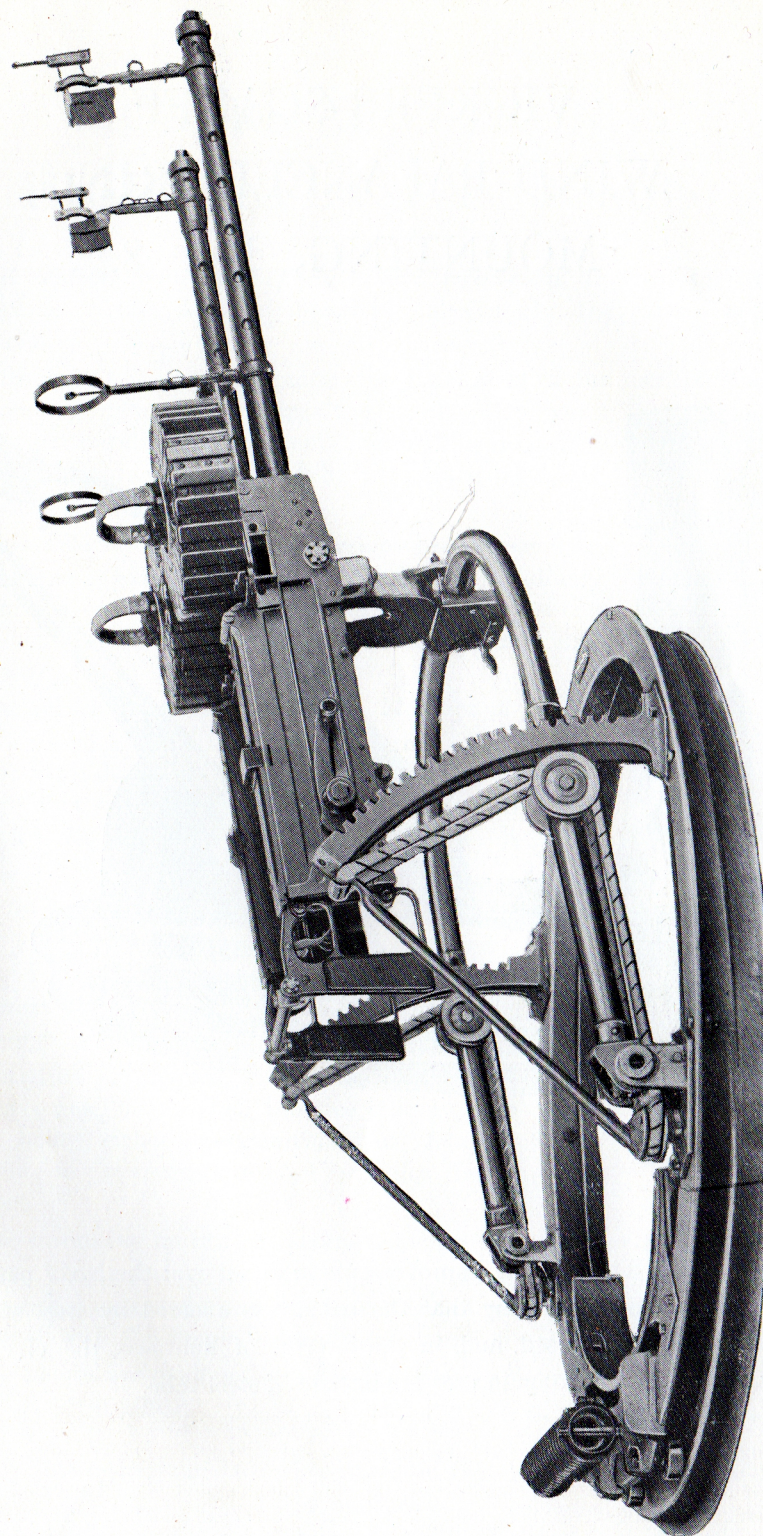
### VICKERS-SCARFF WIND-BALANCED RING MOUNTINGS.

THE Vickers-Scarff Ring Wind-balanced Mounting is now manufactured in two types, Nos. 7 and 8. This form of mounting, which is intended for the observer's gun, has for many years been practically the only type of mounting used by the British Royal Air Force.

The present types differ but little from the original Scarff Ring Mounting which was acquired by Vickers during the War. The main alteration has been the provision of a wind-balancing arrangement, which enables the gun to be used on modern high-speed aircraft. It was found to be practically impossible to traverse the original type of unbalanced mounting in high-speed aircraft, owing to the consequent increased air pressure. The present tendency to carry out operation at high altitudes, where the gunner's strength is adversely affected, also made it extremely desirable to reduce the manual effort to a minimum.

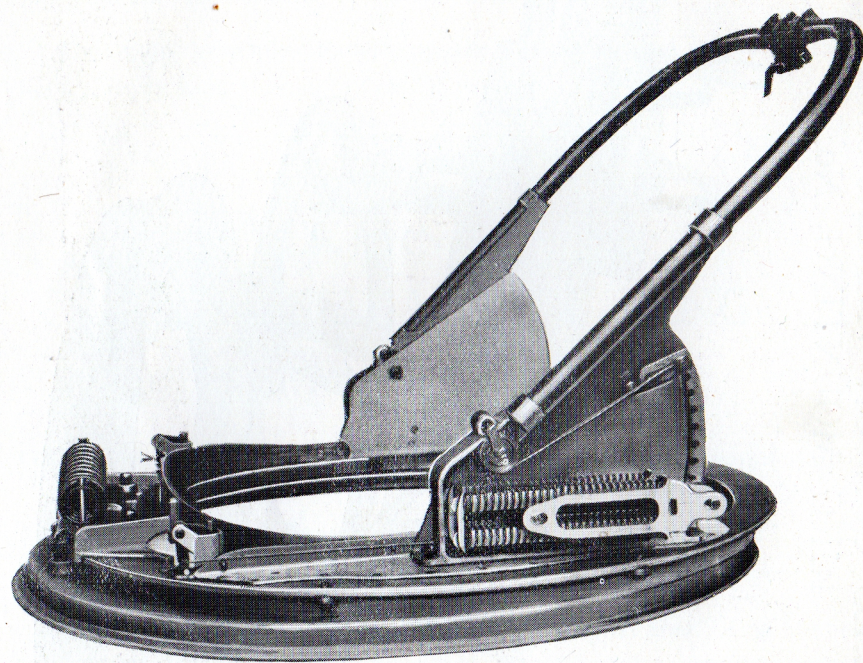
In the No. 7 mounting, the wind-balancing gear gives a turning moment in all positions, equal and opposite to that given by the air pressure on the guns. This mounting can, therefore, be manœuvred into all positions without undue effort.

VICKERS TWIN CLASS GUN ON VICKERS-SCARFF WIND-BALANCED  
RING MOUNTING, No. 7.





## VICKERS-SCARFF WIND-BALANCED RING MOUNTING, No. 8.



The No. 8 type shows improvements in detail over the No. 7 pattern, the main difference being that the balance is effected by steel springs instead of rubber cord, and, in the interest of lightness, the elevating arm is made of duralumin pressing instead of steel tube.

## VICKERS-ARMSTRONGS HIGH EXPLOSIVE BOMBS.

THE Vickers-Armstrongs H.E. Bombs have been designed to overcome certain serious objections inherent in the earlier types of bombs.

Although it is generally recognized that much of the ineffectiveness of bombing operations during the Great War was mainly attributable to indifferent "aiming," it was also undoubtedly adversely affected by the erratic flight of the bomb due to instability.

This defect, besides causing serious inaccuracies in "aim," was often the direct cause of the bomb failing to function on impact, due to its alighting sideways or too much out of alignment with the axis of the firing or striker pins.

The erratic path followed by the old type of bomb was chiefly the result of an accumulation of faults in the general design, such as improper stream-lining, uneven density, wrong position of the tail unit or stabilising fins relative to the C.G. of the bomb, etc., etc.

The new type bomb is satisfactorily stream-lined and stable in flight.

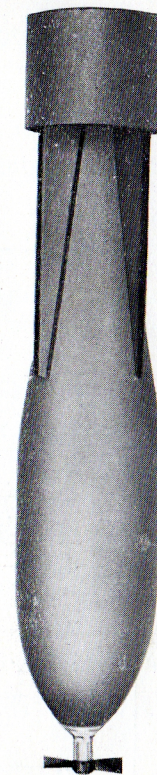
It is provided with adequate fusing and safety arrangements, which, whilst positive in action, ensure maximum safety during handling, storing, transport, and rough usage.

Initiation is effected by a nose fuse only, fitted with a gaine, as in shell practice, the type of fuse fitted being either instantaneous or delay action, according to the tactical purpose for which the bomb is required.

The stabilising fin can be readily detached for transport and loading purposes, thus reducing the possibilities of damage to a minimum. This is considered extremely important, as the tail unit should be in perfect alignment with the bomb to ensure maximum stability during flight.

The bombs are made in the following sizes :—25 kilos ; 50 kilos ; 100 kilos ; and 200 kilos.

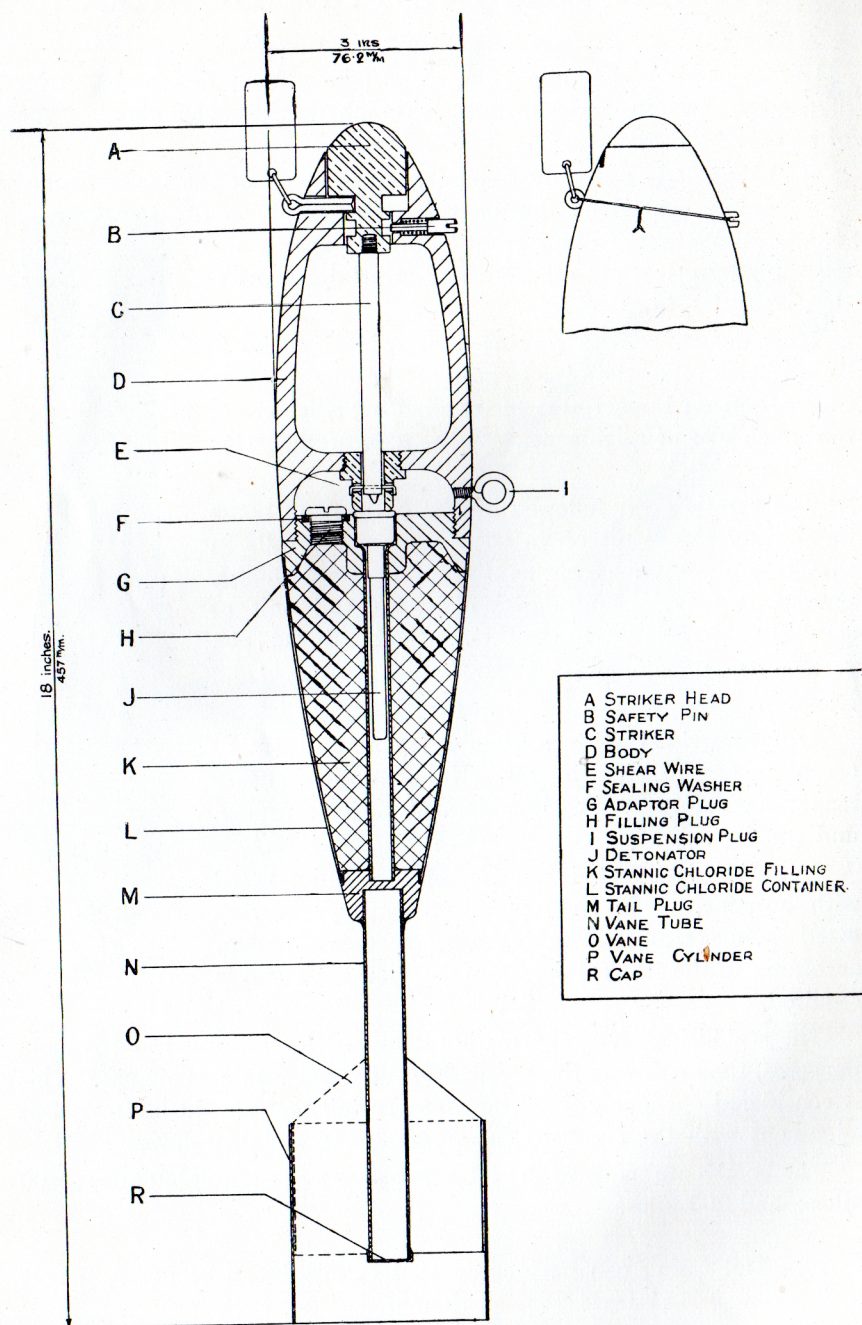
NOTE.—Tail fusing can be incorporated in this design of bomb, if it is so desired.





# PRACTICE BOMB

8 lbs. (3.728 Kgs.).



# PRACTICE BOMB

8 lbs. (3.728 Kgs.).

THE 8-lbs. Practice Bomb, as the name implies, is for use in aerial bomb-dropping practice.

It is designed to give similar external ballistics as the larger general service bombs, and also to provide means whereby the bomber is able to see where the bomb hits.

The bomb is comprised of two main parts, the forward end of which is a cast-iron stream-line shell, on which is screwed the canister and tail unit.

The shell or bomb body contains the striker and safety arrangements, whilst the canister houses the detonator, and is filled with either stannic chloride or titanium tetrachloride.

Upon impact, the detonator disperses the stannic chloride, which, by instantaneous chemical action in contact with the air, forms a large white smoke-cloud.

This smoke-cloud is such that it is readily observed by the bomber in good visibility conditions from very high altitudes, i.e., approximately up to 25,000 feet (7,620 metres).

The Practice Bombs are equally effective when dropped on water or on land objectives.

NOTE.—Stannic chloride and titanium tetrachloride are supplied in separate containers, and the bombs should not be filled until they actually require to be used.



## VICKERS-ARMSTRONGS COMBINED BOMB CARRIER AND LOADING GEAR.

VICKERS-ARMSTRONGS Combined Bomb Carrier and Loading Gear has been designed principally with a view to simplifying the present method of loading bombs, and also to carry the new types of Vickers-Armstrongs H.E. Bombs.

The dominant features of the carrier are :—

- (a) The provision of a self-contained bomb-loading device, equally suitable for land and marine aircraft.
- (b) Simple and effective fusing arrangements.
- (c) Adaptability—one carrier will take several sizes of bombs.
- (d) Lightness and simplicity in general construction and design.

### GENERAL DESCRIPTION.

The carrier is comprised of a main horizontal skeleton frame in which are housed a pulley block, fusing arrangements, and release slip.

The frame is also provided with two rigid end crutches and adjusting screws, for steadying the bomb.

The carrier is secured to the aircraft structure at the point of suspension of the bomb, i.e., immediately above the release slip, and also at each end of the frame.

The bomb loading device consists of a hand-operated horizontal wire pulley block arrangement, at one end of which is anchored the release slip, and at the opposite end a quick threaded spindle fitted with a traversing pulley block.

The spindle is rotated by means of a crank lever fitted with a universal joint, to enable it to be positioned at any point most convenient for operation.

To load the bomb, the release slip is detached from the frame and lowered on to the bomb—lying on the ground, trolley, or boat (in the case of a marine aircraft)—and hooked on to the bomb shackle. The bomb is then hoisted into position, the release slip being readily localised and attached to the carrier frame by means of a special securing pin.

The release slip is so arranged that when positioned after hoisting the bomb, it automatically makes contact with the bomb release control gear, the latter being effectively locked to prevent premature release during the operation of bomb loading.

Type A carrier will take any of the following bomb sizes—25 kilos, 50 kilos, or 100 kilos.

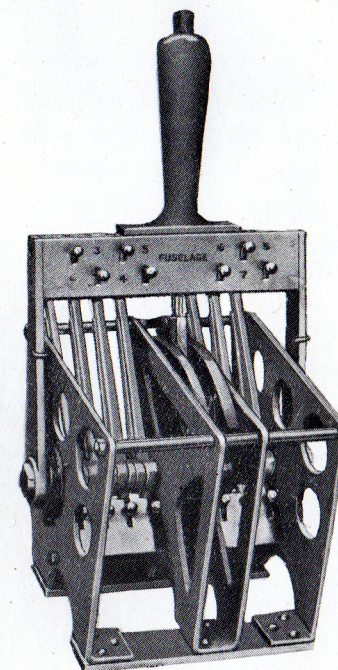
Type B will take either the 100 or the 200 kilo bombs.

## VICKERS-ARMSTRONGS CENTRALIZED BOMB RELEASE CONTROL.

THE congestion in the pilot's and observer's cockpits of modern aircraft, due to the installation of ever-increasing quantities of various types of gear, has made it imperative to produce a special type of bomb release control.

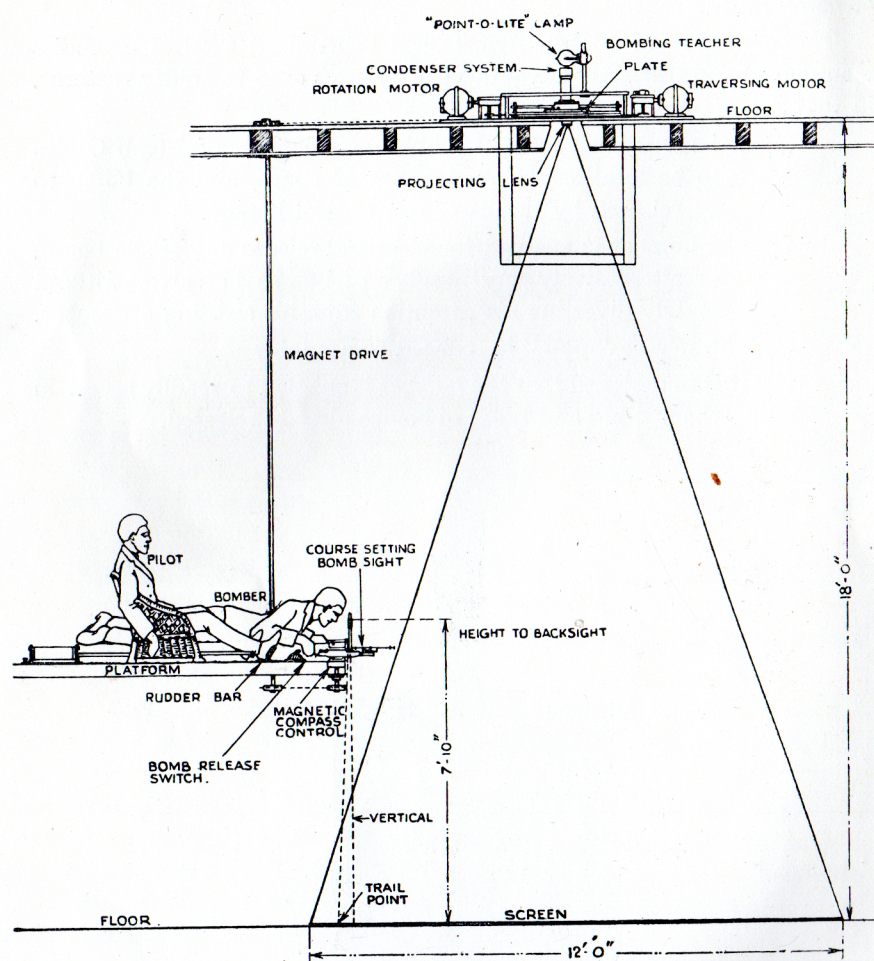
The new type of Vickers-Armstrongs Centralized Control embodies many novel and distinctly advantageous features over the older patterns, in that :—

- (1) It is very compact and enables any number of Bomb Cables to be localized in a minimum of space, and the bomb to be released by means of one control handle.
- (2) The bomber is enabled to select and release any single bomb, or alternatively any number of bombs in salvo, without unduly diverting his attention from his sighting apparatus.
- (3) The release "pull" is reduced to a minimum.
- (4) It is so designed that the bomber is enabled to readily ascertain the number and types of bombs already released.





## VICKERS-BYGRAVE BOMBING TEACHER.



## VICKERS-BYGRAVE BOMBING TEACHER.

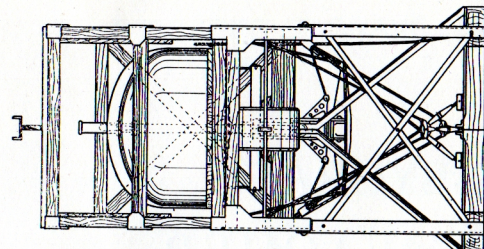
THE training of bombing personnel has been greatly facilitated by a very ingenious device known as the Vickers-Bygrave Bombing Teacher.

This apparatus enables instruction to be given on the ground in air navigation and bomb dropping, under conditions which give a realistic representation of actual flying conditions.

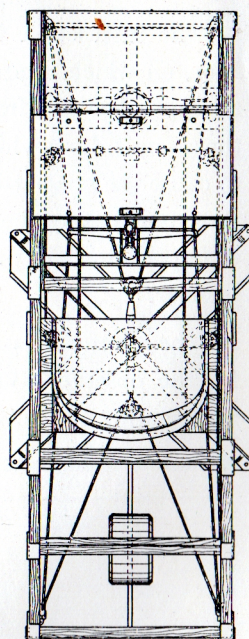
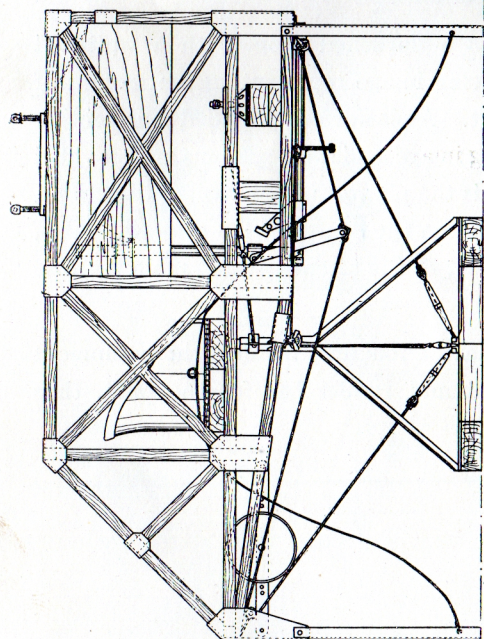
The instruction takes place in a darkened room with a whitened floor, on which is projected a moving image representing the motion of the ground as seen from the aircraft. A platform is provided representing the aircraft, from which the moving image is viewed. Means are provided to cause the image to move towards the platform from various directions, thus assimilating the effects of wind on the course of the aircraft. Also, the apparatus will produce the effect of the aircraft turning in a realistic manner.

The platform is fitted with navigation and bomb sight equipment for the observer's use, and a seat and rudder bar for the pilot, thus representing the actual aircraft.





ROCKING FUSELAGE.



## VICKERS ROCKING FUSELAGE.

EFFICIENCY in aerial gunnery can only be obtained by intensive training, quite distinct from that of ordinary ground gunnery.

The initial training of a pilot can, however, be satisfactorily carried out on the ground by means of the Vickers Rocking Fuselage. This device is specially provided with all the necessary equipment for simulating actual firing conditions in the air, including gun stoppage corrections, aiming and deflection practice when using both live and dummy ammunition.

A deflection target is used in conjunction with the Rocking Fuselage to represent an enemy aeroplane in flight.

NOTE.—A Hythe Camera Gun can also be provided as part of the equipment if desired.



## PYROTECHNICS.

PYROTECHNICS form part of aircraft equipment mainly for signalling and illumination purposes.

To enable aircraft to make night landings, they are provided with Holt Landing Light Flares fitted to the extreme end of the wing tips. These flares are composed of highly luminous composition ignited electrically from the Pilot's cockpit, and are charged to burn for periods of either two minutes or seventy-five seconds.

For night reconnaissance work, bombing or landing purposes, parachute flares are often utilised. A specific type, known as the "Vickers High Velocity Parachute Flare," takes the form of a bomb-shaped container (fitted with an ignition time fuze), in which is packed a parachute with a very high power candle unit attached.

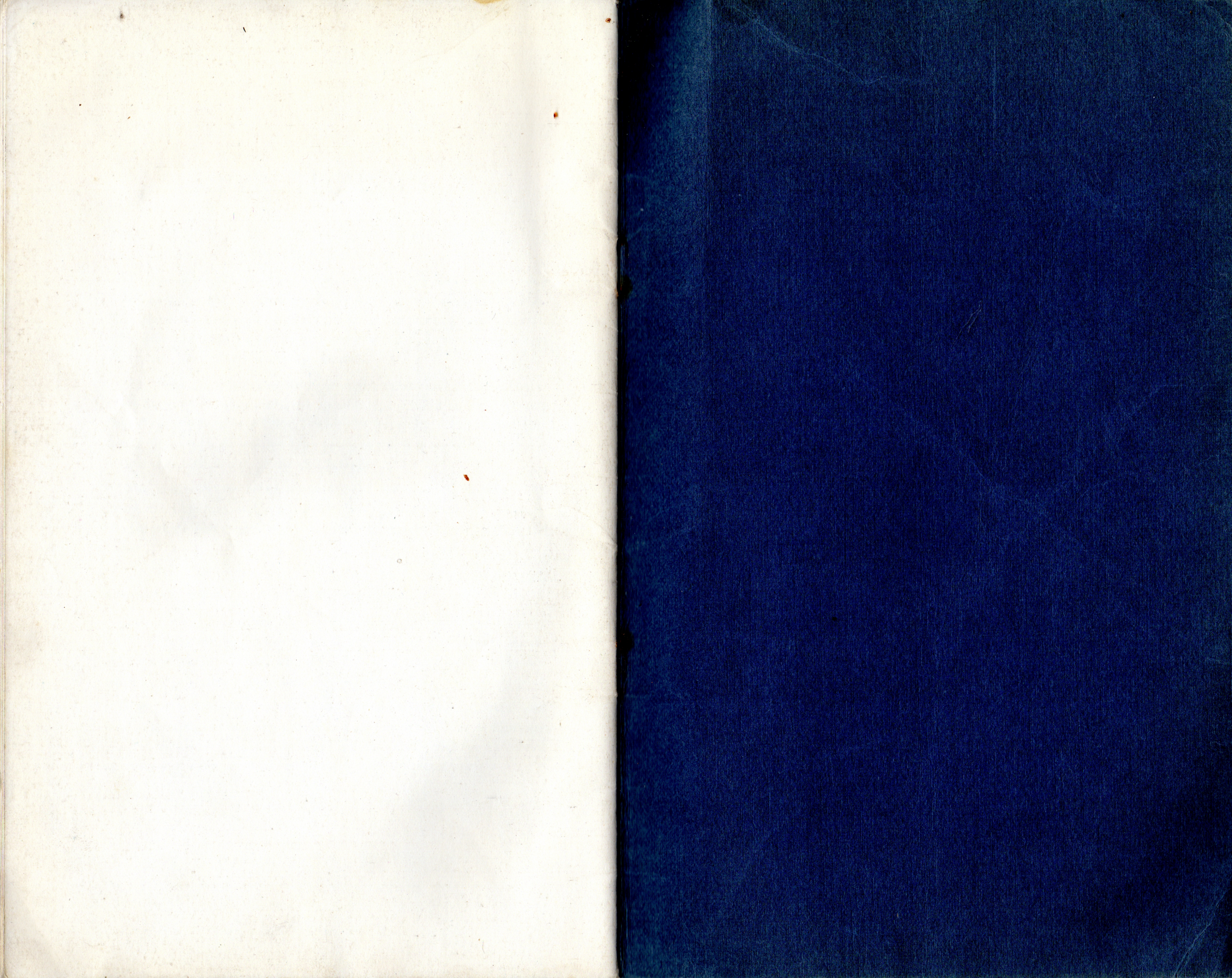
The container on being released from the aircraft, automatically ignites the time fuze, and at a pre-determined distance below the aircraft, the parachute and candle unit is expelled, at the same time igniting the latter.

This type of high velocity parachute can also be utilised for dropping ammunition, rations, or stores of any description.

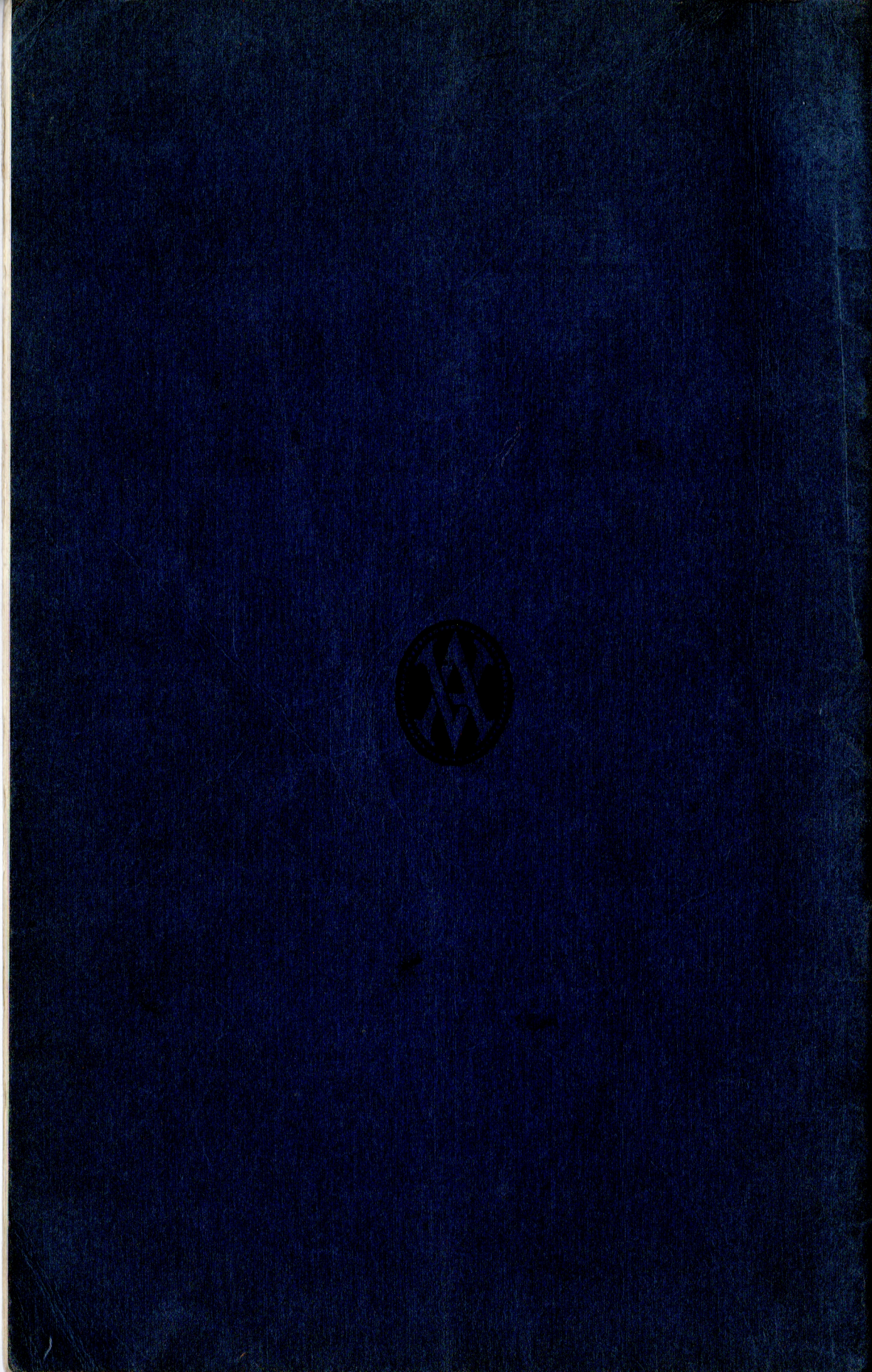
Day and night signalling is invariably carried out by the use of smoke and flare composition devices, either in the form of cartridges or bomb-shaped containers provided with delay fuze to ensure that ignition takes place at a predetermined distance below the aircraft.

One method of doing this is by discharging a container from smooth bore weapon known as a Verey Pistol. The bore of the latter is  $1\frac{1}{2}$  inches (38.1 m/m.), and suitable cartridges are provided containing coloured smoke composition, or flare composition in the form of stars.













This manual has been scanned by the  
Vickers MG Collection & Research Association

[www.vickersmg.org.uk](http://www.vickersmg.org.uk)

Please support the work of the Association.

Click on the image to donate through PayPal:



Or regularly support us through Patreon:

